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HEMORRHAGIC ENCEPHALITES

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The work of Margulis, Solov'yeva, and Shubladze has demonstrated the virus nature of primary hemorrhagic encephalitis. The conclusion that this disease originates independently also follows from the fact that occurrence of an increased number of cases of hemorrhagic encephalitis, which often coincides with outbreaks of influenza, continues after the end of these outbreaks. At the same time, these observations create the impression that there is some pathogenetic connection between influenza and hemorrhagic encephalitis, or, more correctly, a connection between the more frequent occurrence of this form of encephalitis and influenza infections.

However, one must not forget that a more frequent occurrence of cases of Economo's lethargic encephalitis, a disease the specific nature of whose causative factor is not disputed at present, sometimes also coincided with influenza epidemics or followed them. Nevertheless, Economo's encephalitis is regarded as one of the classic examples of a primary virus affliction of the brain. We are inclined to think that the study of any outbreak of hemorrhagic or lethargic enecphalitis which coincides with an influenza outbreak or follows it, as well as of the clinical aspects of these outbreaks, will contribute useful data to our knowledge of certain nervous infections.

During the period December 1947 - April 1948, we observed at our clinic 12 cases of hemorrhagic meningoencephalitis. Our statistical material indicates that prior to 1947 this disease occurred very seldom locally. It is of interest to note that during this period there was also an increased incidence of cases of influenza. Thus, according to the Ministry of Public Health Udmurt ASSR, the monthly incidence of influenza cases registered from the end of 1947 to April 1948 was twice the normal.

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Practically all our patients were inhabitants of the city. Male patients predominated. On the average, the age fluctuated between 11 and 39. The clinical manifestations were as follows. The onset of the disease was acute and frequently had the form of an attack. The patients complained about a headache, tendency to vomit, double vision, weakness in one of the extremities, and brief periods of unconsciousness. Two patients complained about sleepiness. The temperature in all cases was subfebrile. In five cases the initial period of the disease was accompanied by epileptiform attacks, which were observed neither before the beginning of the disease nor subsequently during its course. As a rule, a "grippous" (influenza) condition preceded the disease. Localized focal symptoms appeared during the first few days of the disease. Most frequently, they were hemipareses (in six cases) with the presence of pyramidal symptoms, as well as monopareses and inadequacy of pyramidal tracts in the form of an inequality of reflexes according to the hemitype. In three cases hyperemia of optical nerve endings ["nipples"] was found on investigation of the fundus of the eye. The humor in two cases was hemorrhagic and in one xanthochromic. ROE (erythrocyte sedimentation reaction rate) was accelerated and amounted to 18-30 mm per hour. There was weak leukocytosis in the blood.

One must note the youth of the patients. The average duration of the disease was 6-8 weeks. Complete recovery usually followed. In some cases, the patients retained insignificant disturbances of the function of cerebral nerves and a slight inadequacy of the pyramidal system.

Out of 12 cases, three resulted in death. Let us summarize the histopathological changes found in the lethal cases.

A macroscopic examination of the brain and membranes disclosed subarachnoidal hemorrhages on the convex part as well as the basis of the brain. In one case there was a hemorrhage into the fourth ventricle. Upon section, foci of hemorrhages as well as diffusely dispersed small petechiae were found in the white matter of the cerebral hemispheres as well as in the peduncle.

Microscopically, the basic pathology affected the vascular wall: there were homogenation of the wall, widening of perivascular spaces, deterioration of tissue around the vessels, and hemorrhages of various dimensions. In some regions annular hemorrhages were observed. Hemorrhages "per diapedesin" were also encountered. Hemorrhages were localized in various regions of the brain, but primarily in the white matter. Furthermore, there was hemostasis accompanied by perivascular edemas. Perivascular infiltration, which is usually encountered in other encephalites, was weakly pronounced in our cases. As far as modifications of parenchyma are concerned, they were comparatively weakly expressed. In some places ganglionic cells in an acute state of swelling were encountered. The greatest changes were observed in the region of subcortical ganglia; the cells were swollen and had indistinct contours; the nuclei were displaced towards the periphery.

In such cells, there is excessive accumulation of yellow and brown pigment. Also, neurophagy is encountered. The changes in the glia consist of diffuse proliferations. Regions of demyelinization of nerve fibers occur, particularly in the pons variolii.

The changes described above are in complete accordance with the clinical aspects of the disease. The sudden start, the stunned condition, meningeal and focal symptoms all fit into the picture described above. The circumstance that the course of the disease is benign in most cases may be explained by the fact that there are no copious hemorrhages (those that occur are of the pin-point type). Furthermore, these hemorrhages are localized in the centrum semiovale, i.e., in white matter.

On the basis of clinical, laboratory, and pathohistological data we may conclude that we were dealing with cases of hemorrhagic encephalitis.

As far as the clinical picture is concerned, the patients under observation did not exhibit violent motor, aphasic disturbances, compulsory movements, or modifications of the sensory sphere. The lower branch of the facial nerve as well as the 12th pair were frequently involved. Changes of consciousness occured frequently in our cases, but they were not very deep or prolonged.

A brief epidemiological and clinical analysis of our cases gives us reasons to believe that they all apparently were complications of influenza which preceded the neuropathological condition. The modification of immunological characteristics and reactive forces of the organism brought about by influenza was apperently expressed in one of two possible ways: the influenza infection either activated a neuroinfection that was dormant in the organism or, by weakening the protective forces of the organism built up in the process of adaptation, modified the medium presented to the infection which penetrated into the organism. This may have been expressed in the heightened susceptibility of the blood vessels to injury or some other peculiarities of the pathologoanatomical substrate, particularly the moderate scope of the exudative-proliferative reaction.

Thus, our data, without disproving the existence of primary hemorrhagic forms of encephalitis, testify to the equal practical importance of so-called secondary "grippous" encephalites, which, on the basis of our data, occur much more frequently than the primary forms.

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